Wilsons MECHANICAL

**Repair Checklist (Invasive) Auto Calc v2.0**

-Select System Type-

**AHRI#**

Customer: Date:

Address: Technician (s)

City Province Postal Code

***RH calculations are not correct for DP temperatures below 32F, all fields need to be filled in with accurate measurements for correct calculations**

| | | | |
|---|---|---|---|
| Ref. Type R410a | Metering Device - | Three Phase Voltage Imbalance Percentage (*Max 2%) 0.0% | Voltage: L1-L2 L2-L3 L3-L1 VAC |
| Outdoor Unit: | Model # | **Compressor(s) Amp:** Heating A Cooling A | * Amperage in range? (See name plate Copeland APP and/or manufacturers product specs) if not in range check ratio and troubleshoot system. OD Fan Amp: A |
| | Serial # | * Total Amperage: Heating A Cooling A | |
| Indoor Unit: | Model # | | Voltage: L1-L2 L2-L3 L3-L1 VAC |
| | Serial # | | * Blower Amperage: A Heater + Blower: A |

Filter & Coil Clean ○ YES | Check/Verify Air Flow ○ YES ⓘ / Fan Speed ☐ High | ⓘ TESP " wc Coil PD " wc DRY ○ WET ○

Check/Test Electric Heater, Sequencers and/or Heat Relay ○ YES ○ N/A *Heater Size [ Kilowatt ]* - kW OR Oil / Gas ☐ RPM

Check/Inspect all Electrical Wiring and Components ○ YES | Test Condensate Drain, Trap and/or Pump ○ YES | Over flow switch wired ○ YES ○ N/A

**Test Capacitor(s) under load** ○ YES ○ N/A

| | | | | | | |
|---|---|---|---|---|---|---|
| Blower | VOLTS | AMPS | MFD | Rated MFD | 0.0% | MFD Variation (±6%) |
| Compressor | VOLTS | AMPS | MFD | Rated MFD | 0.0% | MFD Variation (±6%) |
| OD Fan | VOLTS | AMPS | MFD | Rated MFD | 0.0% | MFD Variation (±6%) |

Purge w/ Nitrogen ○ YES Pressure Test w/ Nitrogen ○ YES Vacuum System (Micron Value) m Vacuum Duration (Approx.) hrs min

**Thermostat Staging Differential** First (HP) (1F/0.5C - °F OR - °C Second **(AUX)** (2F/1C - °F OR - °C **Delay** (30-60min) - Min

Check/Set Balance Points ○ YES ○ N/A High BP - °F OR - °C Low BP - °F OR - °C

Set/Check Defrost Termination/Time ○ YES ○ N/A - Min OR - °F (60min/70°F) Test/Forced Defrost ○ YES ○ N/A

| Outdoor Unit | HEATING | | COOLING | | Indoor Unit | HEATING | COOLING |
|---|---|---|---|---|---|---|---|
| TET / CTOA | | | °F | ° ±5 | *Target Delta T (ΔT) ⓘ Input rated manufacturers heating & cooling capacity | RATED HEATING CAPACITY BTU/H @ OAT °F | RATED COOLING CAPACITY BTU/H @ OAT °F |
| Suction Pressure | | | | PSIG | | ° ΔT | °ΔT *TEET °F ±3 *DB & WB Required for accurate calculation |
| Discharge Pressure | | | | PSIG | *Entering Air Temp | DB °F | DB / WB °F % RH |
| Compression Ratio | :1 | | :1 | | *Leaving Air Temp | DB °F | DB / WB °F % RH |
| Suction Line | | | | °F | **Actual Temperature Split** (ΔT) | ° | ° |
| Liquid Line | | | | °F | ***Total Capacity** | HEATING CAPACITY BTU/H COP / Tons | SENSIBLE BTU/H LATENT BTU/H COOLING CAPACITY BTU/H / SENSIBLE HEAT RATIO ΔH BTU/LB Tons |
| Superheat / Subcooling | °SH | °SC | °SH | °SC | | | |
| Discharge / DSH | | | | °F | Total Power Input | Watts KWh | Watts KWh EER |
| **Outside Air** | DB °F | DB °C | % RH | | ☐ Verified Air Flow **CFM** (Nominal 400CFM per Ton) CFM/Ton | | Valve Caps installed tightened, and Service Valves open? ○ YES |
| | WB °F | DP °F | | | **Total Capacity Within ±10% of High/Low Range of Rated Capacity?** ○ YES ○ NO If No, Troubleshoot system. | RATED HEATING CAPACITY BTU/H HEATING CAPACITY BTU/H VARIATION 0.0% / RATED COOLING CAPACITY BTU/H COOLING CAPACITY BTU/H VARIATION 0.0% | |

*Always use Equipment Test mode Central, (High fan speed; ductless) located in Thermostat to ensure proper readings due to potential air flow changes

Calculating capacitor under a load requires amperage from start winding (HERM) and voltage between C and HERM

All measurements are to be made closest to the unit as possible but out of sight of coil and after a minimum of 15mins of operation in each mode and verified that the unit has reached maximum capacity. Psychrometer is needed to measure Wet Bulb temperature at the unit. the accuracy of the measurement will determine capacity calculation. Calculations will only be performed for Indoor unit A, they are only accurate when CFM is verified. Please use provided product specs to determine CFM on HIGH fan speed (ductless), ECM readout (constant CFM) or static pressure (constant torque) see info icons and Bold text for links to more info

RH calculations are not correct for Dew Point temperatures below 32F, DP Calculations are not accurate below RH of 50%, RH calculations above DP temperature of 32F are within 1.02% Capacity calculations are within 5%

Calculated Target Delta T using manufacturers output ratings @ specified Outdoor Air Temperature can be used as a baseline while also checking manufacturers product specifications to verify the unit is operating as the manufacturer intended.

Target Evaporator Temperature or TET = The saturation temperature the evaporator coil should be based on the return air temperature (Standard DTD of 35°F). using a PT chart compare the target saturation temperature to evaporator pressure.

Target Condensing Temperature Over Ambient (CTOA), The target temperature difference of the condensing temperature and the ambient air, please measure the outdoor air temperature in the shade entering the condenser. range of ±5 degrees. This will be 30° over ambient on old units, and 15° for new high efficiency units

Compression Ratio, Heat Pump applications compression ratios of 2.3:1 to 3.5:1 are common

DSH - Discharge Superheat, the difference between liquid line saturation temperature and compressor discharge temperature, typically 25 to 45 degrees

NOTES

RECOMMENDATIONS